Appendix D

FINAL
RD/RA STATEMENT OF WORK

INDUSTRI-PLEX OPERABLE UNIT 2 (INCLUDING WELLS G&H OPERABLE UNIT 3) SUPERFUND SITE

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I. INTRODUCTION AND PURPOSE

This Remedial Design/Remedial Action ("RD/RA") Statement of Work ("SOW") defines the response activities and deliverable obligations that the Settling Defendants are obligated to perform in order to implement the Work required under the Consent Decree at Operable Unit 2 of the Industri-plex Superfund Site in Woburn, Massachusetts ("Industri-plex OU-2"). The activities described in this SOW are based upon the United States Environmental Protection Agency's ("EPA") Record of Decision ("ROD") for Industri-plex OU-2 signed by the Director of the Office of Site Remediation and Restoration, New England Region, on January 31, 2006.

The Massachusetts Department of Environmental Protection ("MassDEP") concurred with the ROD, subject to the matters identified in MassDEP's January 30, 2006 concurrence letter (see Appendix A of the ROD).

II. DEFINITIONS

The definitions provided in the Consent Decree, as well as the Record of Decision, are incorporated herein by reference. In addition, the following definitions shall apply to this SOW:

A. "Design" shall mean an identification of the technology and its performance and operational specifications, in accordance with all applicable federal, state, and local laws, including, but not limited to:

1. all computations used to size units, determine the appropriateness of technologies, and the projected effectiveness of the remedial action;

2. scale drawings of all system layouts, including, but not limited to, excavation cross-sections, well logs and geologic cross-sections, cap cross sections, erosion and sedimentation controls, and wetland construction plans;

3. materials handling and system layouts for any excavation/dredging/removal, treatment and disposal of sediments and/or soils; extraction, treatment and disposal of groundwater and/or surface water, and decontamination and demobilization of facilities to include size and location of units, treatment rates, location of electrical equipment and pipelines, and treatment of effluent discharge areas;

4. quantitative analysis demonstrating the anticipated effectiveness of the Remedial Design to achieve the Performance Standards;

5. technical specifications which detail the following:

   a. size and type of each major component; and

   b. required performance criteria of each major component;

6. description of the extent of environmental and ambient air monitoring including equipment, monitoring locations, and data handling procedures; and

7. description of access, land easement, restrictive covenants, and any other Institutional Controls required by the selected remedy, including implementation plans, construction plans and specifications.

III. SELECTED REMEDY

The ROD describes the selected remedy for Industri-plex OU-2. The selected alternatives (SS-2, SUB-2, GW-2, GW-4 for WHP, HBHA-4, NS-4, DS-2, and SW-2) which comprise the selected remedy are described in the ROD and are generally depicted in Figures J-1 through J-9, and Figure L-1 of the ROD and this SOW.

The major components of the selected remedy include the following:

- Dredging and off-site disposal of contaminated sediments in the southern portion of the HBHA Pond; dredging and off-site disposal of contaminated near shore sediments at the Wells G&H Wetland and Cranberry Bog Conservation Area; and restoration of all disturbed areas. This component shall address sediments posing unacceptable human health risks for near shore sediments and unacceptable ecological risks for the southern portion of HBHA Pond.

- Use of the northern portion of HBHA Pond as a sediment retention area (primary and secondary treatment cells) that shall intercept contaminated groundwater plumes (including arsenic, benzene, ammonia, 1,2-dichloroethane, trichloroethene and naphthalene) from Industri-plex OU-1∗, treat/sequester contaminants of

∗ The boundaries of the Industri-plex Superfund Site, Industri-plex OU-1, and Industri-plex OU-2 are generally depicted in Figures A-1, A-2 and A-3, respectively, of the ROD

concern (including arsenic, benzene and ammonia), and minimize downstream migration of contaminants (including arsenic, benzene and ammonia). The primary treatment cell shall intercept the contaminated groundwater plumes discharging into the HBHA Pond. The secondary treatment cell shall further treat contaminants of concern, and address any episodic releases from the primary treatment cell. The effluent from the northern portion of the HBHA Pond (secondary treatment cell outlet) shall serve as the surface water compliance boundary and achieve National Recommended Water Quality Criteria (NRWQC). Sediments which accumulate in the northern portion of the HBHA Pond shall be periodically dredged and sent off-site for disposal. Portions of storm water from Halls Brook, which may interfere with the natural treatment processes occurring within the northern portion of the HBHA Pond, shall be diverted to the southern portion of HBHA Pond.

- If selected by EPA, In-situ Enhanced Bioremediation of contaminated groundwater plumes (e.g., benzene) at the West Hide Pile (WHP).

- Construction of an impermeable cap to line stream channels (e.g. New Boston Street Drainway), and to prevent the discharge of contaminated groundwater plumes, contamination of stream sediments, downstream migration of contaminants of concern, and potential impacts to other components of the selected remedy.

- Construction of a permeable cap to prevent contaminated soil erosion (e.g. Area A6), downstream migration of contaminants of concern, and potential impacts to other components of the selected remedy.

- Establishing Institutional Controls to restrict contact with soils, groundwater, or deeper interior wetland sediments with concentrations above cleanup standards and protect the remedy. The controls shall be consistent with EPA's "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups" (OSWER 9355.0-74 FS-P, cited in EPA's Administrative Record Compendium of Guidance Documents).

- Construction of compensatory wetlands for any loss of wetland functions and values associated with the selected remedy (e.g. northern portion of HBHA Pond, Halls Brook storm water by-pass, capped stream channels) nearby in the watershed.

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and this SOW.

- Long-term monitoring of the groundwater, surface water, and sediments, periodic monitoring and inspection of the Institutional Controls, and periodic Five-year Reviews of the remedy.

Under the In-situ Enhanced Bioremediation at the West Hide Pile (WHP), the Settling Defendants shall collect additional groundwater, surface water and sediments data at/near the WHP area (including the East Hide Pile (EHP)) and nearby wetlands to further understand contaminated groundwater migration and impacts. The data must also be sufficient for EPA to determine if additional unacceptable human health and/or ecological risks exist at the WHP and nearby wetlands. If Institutional Controls have been properly established on the properties restricting human health exposures to contaminated groundwater and EPA determines that there are no other unacceptable human health and/or ecological risks, then it may not be necessary to implement this enhanced bioremediation component of the remedy at the WHP.

The specific details of the design and implementation of the selected remedy will be finalized during the Remedial Design phase, and will depend on the results of the various pre-design investigations. The final design of the HBHA Pond component of the selected remedy may differ somewhat from the conceptual layout of the two low-head cofferdam system described in the ROD for the HBHA Pond component. The HBHA Pond component, for example, has many sub-components which are inter-dependent: The location of the first low-head cofferdam and size of the primary treatment cell will greatly depend upon pre-design investigations to further delineate the extent of the contaminated groundwater plumes' discharge into the HBHA Pond so that the primary treatment cell captures all of the contaminated groundwater plumes. The locations of the first low-head cofferdam, the size of the primary treatment cell and the design of the secondary treatment cell will directly affect other remedy components such as the length/size of the Halls Brook storm water by-pass system, the size of the southern portion of the HBHA Pond requiring dredging and restoration, and the amount of wetlands compensation. During the pre-design investigations and Remedial Design phase, efforts will be made to design the cofferdams to be the same height as the HBHA pond outlet invert level in order to further minimize flood storage losses, without diminishing the effectiveness and objectives of the primary and secondary treatment cells in conformance with the ROD. Depending upon the final design of the HBHA Pond component, one design option may be using the entire HBHA Pond as the sediment retention area which includes the primary and secondary treatment cells. The final design will comply with all applicable or relevant and appropriate ("ARAR") standards identified in the ROD, including, but not limited to, the Massachusetts Wetlands Protection Act, and Federal Statement of Procedures on Floodplain Management and Wetlands Protection (including Executive Order on Floodplain Management and Executive Order on Protection of Wetlands).

IV. PERFORMANCE STANDARDS

The Settling Defendants shall design, construct, operate, monitor, and maintain the remedy in compliance with Section L of the ROD, all ARARs standards cited in the ROD, and all requirements of the Consent Decree and this SOW. The Performance Standards in the ROD are incorporated herein by reference.

The Settling Defendants shall utilize local labor and materials to the extent practicable in all design and construction activities.

The Settling Defendants shall achieve the following Performance Standards described in the ROD. If EPA, in consultation with MassDEP, determines that a Performance Standard is no longer being attained, Settling Defendants shall take additional actions consistent with the terms of the Consent Decree.

As required under CERCLA Section 121(c), EPA will review the Site at least once every five years after the initiation of remedial action at the Site if any hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unrestricted use and unlimited exposure. As part of this review, EPA will review environmental monitoring data and evaluate the effectiveness of Institutional Controls to determine if the remedy is still protective of human health and the environment. Pursuant to Section VII of the Consent Decree, Settling Defendants shall conduct any studies and investigations as requested by EPA, in order to permit EPA to conduct these reviews.

A. Cleanup Standards

1. Ground Water Performance Standards

SUMMARY OF GROUNDWATER PERFORMANCE STANDARDS	
Arsenic	150 µg/L
Benzene	4 µg/L
1,2-Dichloroethane	2 µg/L
Trichloroethene	1 µg/L
Naphthalene	5 µg/L
Ammonia	4000 µg/L

µg/L = micrograms per liter

Institutional Controls shall be required to restrict unacceptable exposure to groundwater that exceeds these Performance Standards. As determined by EPA, In-situ Enhanced Bioremediation

may be required at the West Hide Pile to achieve groundwater performance standards.

2. Soil Cleanup Standard

SUMMARY OF SOIL CLEANUP STANDARDS	
Arsenic	50 mg/kg

mg/kg = milligrams per kilogram

Institutional Controls shall be required to restrict unacceptable exposure to soil that exceeds this Performance Standard.

3. Sediment Cleanup Standards

SUMMARY OF SEDIMENT CLEANUP STANDARDS	
Near Shore Cranberry Bog Conservation Area (e.g. CB-03)	
Arsenic	230 mg/kg
Near Shore Wells G&H Wetland (e.g. WH, NT-3, 13/TT-27)	
Arsenic	300 mg/kg
Benzo(a)pyrene	4.9 mg/kg
Deeper Interior HBHA Wetland and Wells G&H Wetland (e.g. SC02, SC05, SC06, SC08)	
Arsenic	300 mg/kg
HBHA Pond (ecological)	
Arsenic	273 mg/kg

mg/kg = milligrams per kilogram

These sediment cleanup standards must be met at the completion of the remedial action at the points of compliance as follows:

(a) The compliance point for near shore sediments at the Wells G&H Wetland is identified as the areas of accessible sediments (as determined consistent with those sediment areas previously identified as accessible in the baseline risk assessment) targeted for excavation that currently exceed the sediment cleanup standard

extending up to 30 feet from the shore line (generally east/west direction) into the wetlands and continuing laterally (generally north/south direction) until the sediment cleanup standard is achieved based upon confirmation samples analyzed for arsenic and benzo(a)pyrene using the most recent version of EPA-approved analytical methods. The shoreline generally begins at the edge of wetlands. The approximate location of the near shore sediment areas targeted for excavation within the Wells G&H Wetland are generally depicted on Figures J-8 and L-1 of the ROD and this SOW. Note: although a performance standard is established for benzo(a)pyrene in wetland sediments, interim sampling to better delineate the extent of excavation may be performed only for arsenic, due to the sediments being primarily and extensively contaminated with arsenic, and containing relatively low benzo(a)pyrene concentrations when compared with background concentrations. Final confirmatory sampling will require samples to be analyzed for arsenic and benzo(a)pyrene.

(b) The compliance point for near shore sediments at the Cranberry Bog Conservation Area is identified as the areas of accessible sediments (as determined consistent with those sediment areas previously identified as accessible in the baseline risk assessment) targeted for excavation that currently exceed the sediment cleanup standard primarily along the drainage swales (also known as bog irrigation channels) and continuing until the sediment cleanup standard is achieved based upon confirmation samples analyzed for arsenic using the most recent version of EPA-approved analytical methods. The approximate location of the near shore sediment areas targeted for excavation within the Cranberry Bog Conservation Area are generally depicted on Figures J-8 and L-1 of the ROD and this SOW.

(c) The compliance point for deeper interior wetland sediments at the HBHA Wetlands and Wells G&H Wetlands is identified as the areas targeted for potential future dredging projects that currently exceed the sediment cleanup standard for arsenic. The approximate location of the deeper interior wetland sediment areas exceeding the cleanup standard at HBHA Wetlands and Wells G&H Wetlands are generally depicted on Figures J-9 and L-1 of the ROD and this SOW.

(d) The compliance point for sediments at the southern portion of the HBHA Pond is identified as the areas for excavation/removal that currently exceed the sediment cleanup standard and continuing until the sediment cleanup standard is achieved based upon confirmation samples analyzed for arsenic using the most recent version of EPA-approved analytical methods. The approximate boundaries of the HBHA pond (including northern and southern portions of the pond) are generally depicted on Figure J-6 of the ROD and this SOW. However, the boundaries of the area of sediment to be remediated in the southern portion of the HBHA Pond shall not be determined until the size and location of the primary and secondary treatment cells within the northern portion of the HBHA pond is determined. The specific details of the design and implementation of the selected remedy will be finalized during the Remedial Design phase, and will depend on the results of the various pre-design investigations. The final design of the HBHA Pond component of the selected remedy may differ somewhat from the conceptual layout of the two low-head cofferdam system described in the ROD for the HBHA Pond component. Depending upon the final design of the HBHA Pond component, one design option may be using the entire HBHA Pond as the sediment retention area which includes the primary and secondary treatment cells. If the entire HBHA Pond is used, then sediment excavation/removal would no longer be needed within the pond, except for sediment removal performance standards under Section IV.B.1(a).

(e) The compliance point for the impermeable cap is identified as the area of the stream channel (e.g., New Boston Street Drainway) where contaminated groundwater plumes discharge into the channel, contaminate sediments, and potentially migrate downstream, impacting components of the selected remedy (including the remediated southern portion of the HBHA Pond). The approximate location of the New Boston Street Drainway is generally depicted on Figures J-6 and L-1 of the ROD and this SOW. The location and boundaries of stream channel(s) areas requiring an impermeable cap will be determined during design based upon where contaminated groundwater plumes discharge into the stream channel(s). These locations and boundaries shall consider groundwater concentrations which may contaminate sediment (above HBHA Pond sediment cleanup levels) and/or

surface water (above surface water cleanup standards).

(f) The compliance point for the permeable cap is identified as the area where contaminated soils are above the HBHA Pond sediment cleanup standard for arsenic (e.g., Area A6), and may erode and migrate downstream impacting components of the selected remedy (including the Northern Portion of the HBHA Pond)). The approximate location of the Area A6 is generally depicted on Figures J-6 and L-1 of the ROD and this SOW, and other figures in the MSGRP RI and FS. The location and boundaries of contaminated soils requiring a permeable cap adjacent/near the HBHA Pond will be determined during design based upon soil concentrations that exceed the HBHA Pond sediment cleanup standard for arsenic.

4. Surface Water Cleanup Standards

SUMMARY OF SURFACE WATER CLEANUP STANDARDS

Arsenic	150 ug/L
Benzene	46 ug/L
Ammonia (temperature and pH dependent)	NRWQC

µg/L = micrograms per liter

The surface water cleanup standard for arsenic (150 µg/L) is set at the NRWQC Criterion Continuous Concentration (NRWQC-CCC)(chronic criterion) value (EPA 2002). The surface water cleanup standard for ammonia is set at the NRWQC-CCC (chronic criterion) value for Fish Early Life Stages Present and is a 30-day average concentration of total ammonia nitrogen (in mg N/L), not to be exceeded more than once every three years on average. Since the toxicity of ammonia varies depending on water temperature and pH, the ammonia NRWQC-CCC value is adjusted for temperature and pH in accordance with EPA's 1999 Update of Ambient Water Quality Criteria for Ammonia; dated December 1999 (EPA Document No. EPQ-822-R-99-014). The cleanup standard for benzene (46 ug/l) for the HBHA Pond is set at the Water Quality values calculated using Great Lakes Water Quality Initiative Tier II methodology (Tier II benchmark value).

These surface water cleanup standards must be met at the completion of the remedial action at the point of compliance, which is defined as the discharge point of the secondary treatment cell within the northern portion of the HBHA pond.

These cleanup standards are consistent with ARARs for surface water, attain EPA's risk management goals for remedial action, and are protective of the environment. The specific details of the design and implementation of the selected remedy will be finalized during the Remedial Design phase, and will depend on the results of the various pre-design investigations. The final design of the HBHA Pond component of the selected remedy may differ somewhat from the conceptual layout of the two low-head cofferdam system described in the ROD for the HBHA Pond component. Depending upon the final design of the HBHA Pond component, one design option may be using the entire HBHA Pond as the sediment retention area which includes the primary and secondary treatment cells.

B. Additional Performance Standards

1. Groundwater Intercept System

(a) HBHA Pond shall be used to intercept contaminated groundwater plumes from Industri-plex OU-1 and sequester/treat contaminants so that surface water discharge from the northern portion of the HBHA Pond (i.e. sediment retention area which includes the primary and secondary treatment cells) is below surface water cleanup standards (e.g. National Recommended Water Quality Criteria, benchmark criteria) for those contaminants. Sediments that accumulate in the northern portion of the HBHA Pond (or a larger portion of the pond as referenced in Section IV.A.3(d)) shall be removed periodically and disposed off-site at an approved licensed facility in conformance with the ROD and all ARARs. The northern portion of the HBHA Pond shall be divided into a primary and secondary treatment cell to achieve cleanup standards, comply with remedial action objectives, and not impact other components of the selected remedy. The sediments that accumulate in the northern portion of the HBHA Pond shall be removed periodically to prevent excessive accumulation of sediments, maintain the integrity of the chemocline, and maintain the functions of the primary and secondary treatment cells. The dredging measures associated with the northern portion of the HBHA Pond may include hydraulic dredging measures. In addition to other design and performance criteria that will be detailed in the remedial design, the following conditions will trigger dredging in the northern portion of the HBHA Pond (primary and/ or secondary treatment cells): 1) if the chemocline rises to within 100 cm of the top of the primary treatment cell low-head cofferdam (first cofferdam) outlet, or 2) concentrations of surface water effluent/outlet from the second treatment cell low-head cofferdam (second cofferdam) exceed the surface water

cleanup standards. However, EPA may allow the Settling Defendants to implement interim measures, in order to postpone dredging activities at the HBHA Pond, if EPA determines such interim measures will prevent excessive accumulation of sediments, maintain the integrity of the chemocline, and maintain the functions of the primary and secondary treatment cells. These interim measures (for example, actions other than dredging) may temporarily postpone the need for dredging operations until the interim measures are no longer effective and excessive sediment accumulation and/or deteriorating surface water treatment performance within primary and/or secondary treatment cells requires dredging. Frequent long-term monitoring will be necessary to monitor the system.

A portion of the sediments in the northern portion of the HBHA Pond help maintain the supply of ferrous iron that contributes to the capture of arsenic near the chemocline and promote microbial degradation, which suggests that when dredging becomes necessary, only partial dredging should be implemented sufficient to lower the elevation of the chemocline and provide further sediment retention capacity. Also, dredging in the northern portion of the HBHA Pond should only be implemented when necessary to ensure the selected remedy is functioning appropriately, to achieve the remedial action objectives and standards, and to ensure that the chemocline remains sufficiently low in the water column to prevent elevated releases of contaminants of concern downstream of the HBHA Pond;

(b) Sediments and surface water in the southern portion of the HBHA Pond shall be removed and restored to achieve sediment and surface water cleanup standards in conformance with the ROD, and all ARARs, including, but not limited to, the Massachusetts Wetlands Protection Act and Federal Clean Water Act;

(c) Storm water by-pass system shall be designed and constructed for storm surface water flows (e.g. Halls Brook) that may disrupt the chemocline (stratification of the heavier (greater density) contaminated deep water and lighter (lower density) shallow water) and sequestering/treatment processes within the northern portion of the HBHA Pond, and/or cause contamination above performance standards to migrate downstream. The specific details of the design and implementation of the selected remedy will be finalized during the Remedial Design phase, and will depend on the results of the various pre-design investigations. The final design of the HBHA Pond component of the selected remedy may differ somewhat

from the conceptual layout of the two low-head cofferdam system described in the ROD for the HBHA Pond component;

Construction of the storm water by-pass system may be postponed, or avoided if a storm water holding and velocity dissipation system is instead evaluated, designed, and constructed. If EPA, in consultation with MassDEP, determines that the constructed storm water holding and velocity dissipation system satisfactorily addresses all the storm water by-pass system requirements and objectives in accordance with the ROD, including all ARARs at the surface water point of compliance (i.e. the discharge point of the secondary treatment cell within the northern portion of the HBHA pond), then construction of the storm water by-pass system may not be necessary. If EPA, in consultation with MassDEP, determines that the storm water holding and velocity dissipation system is unsatisfactory, then construction of a storm water by-pass system will be required;

(d) Impermeable caps shall be designed and constructed to line stream channels and prevent the discharge of contaminated groundwater plumes into surface water (e.g. New Boston Street Drainway), downstream migration of contaminants of concern and potential impacts to other components of the selected remedy;

(e) Permeable caps shall be designed and constructed to prevent contaminated soil erosion (e.g. Area A6), downstream migration of contaminants of concern, and potential impacts to other components of the selected remedy; and

(f) Wetland and water function and value losses resulting from the selected remedy (e.g. northern portion of the HBHA Pond, stormwater by-pass system, capped areas) shall be compensated nearby in the watershed in conformance with the ROD and all ARARs, including, but not limited to, the Massachusetts Wetlands Protection Act and Federal Clean Water Act.

The HBHA Pond remedy components associated with the Groundwater Intercept System are generally and conceptually depicted on Figures J-6, J-7 and L-1 of the ROD and this SOW. The size/area and location of the primary and secondary treatment cells within the northern portion of the HBHA Pond (i.e. sediment retention area which includes primary and secondary treatment cells), as well as the southern portion of the HBHA pond, stormwater by-pass system, permeable and impermeable caps, and compensatory wetlands, shall be determined during design.

In addition, the design process for the HBHA Pond component of the selected remedy will consider minimizing flood storage losses. Any flood storage losses resulting from the selected remedy shall be compensated nearby in the watershed in conformance with the ROD and all ARARs, including, but not limited to, the Massachusetts Wetlands Protection Act, and Federal Statement of Procedures on Floodplain Management and Wetlands Protection (including Executive Order on Floodplain Management and Executive Order on Protection of Wetlands).

2. Aberjona River Sediments

(a) Near-shore sediments in the Wells G & H Wetland and the Cranberry Bog Conservation Area exceeding the sediment cleanup standards are to be removed, the near shore area shall be restored, and the contaminated sediments shall be dewatered and disposed of off-site at an approved licensed facility in conformance with the ROD and all ARARs, including, but not limited to, the Wetlands Protection Act and Clean Water Act. The general locations of the near-shore areas requiring excavation are depicted on Figure J-8 in the ROD.

(b) Implementation of this remedy component should include measures to: prevent the downstream migration of contaminants during construction; dewater the area proposed for excavation (as necessary) and dewater excavated materials; treat resulting water; install low-head cofferdams or other means to hydraulically isolate excavation areas from the open water portions of the wetland; replace wetland substrate and vegetation that was removed; and restore all areas impacted during construction in conformance with the ROD and all ARARs, including, but not limited to, the Wetlands Protection Act and Clean Water Act. During design, proposed construction methods, access points, and haul routes will be discussed and coordinated with local officials to ensure that adverse impacts on the community during construction are minimized.

3. Institutional Controls

Institutional Controls shall be consistent with EPA's "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups" (OSWER 9355.0-74 FS-P, cited in EPA's Administrative Record Compendium of Guidance Documents). The selected remedy may require Institutional Controls to be established in the form of a Grant of Environmental Restriction and Easement,

running with the land. Any such Institutional Controls, for which a request to MassDEP to serve as grantee is anticipated, shall also be consistent with EPA and MassDEP guidance documents and regulatory requirements, including any model forms/ documents applicable to Institutional Controls (e.g. Grant of Environmental Restriction and Easement). EPA, in consultation with MassDEP, shall approve of the form, design and implementation of each Institutional Controls remedy component, including (a) through (d) below.

(a) Risks from exposure to contaminated groundwater shall be controlled through the implementation of Institutional Controls. In areas where groundwater contamination exceeds the above performance standards in Section IV.A.1, Institutional Controls shall be required to restrict drinking water, industrial process water, or other purposes (such as water for a commercial car wash facility and groundwater encountered during excavation activities).

(b) Risks from exposure to contaminated surface (0' - 3' below ground surface) and sub-surface (3' – 15' below ground surface) soils in the former Mishawum lakebed area shall be controlled through the implementation of Institutional Controls. In areas where surface or sub-surface soil contamination exceeds the cleanup standards in Section IV.A.2, Institutional Controls shall be required to restrict excavations without adequate worker health and safety precautions (e.g. engineering controls, personal protective equipment (PPE), monitoring, etc.) to minimize or prevent direct contact with contaminated soil during removal activities, and restrict potential on-site and off-site spread of contamination. Furthermore, on properties where surface soils exceed the cleanup standards, it will also be necessary to restrict land use so that child care facilities are prohibited in those areas, as well as other analogous land uses where children will be exposed to soil at similar high frequency and intensity such as schools, residential yards, etc.

(c) Risks to humans from future exposures to deeper interior wetland sediments at the Halls Brook Holding Area (HBHA) Wetland and Wells G & H Wetland by dredging workers shall be addressed through the use of Institutional Controls in areas where sediment contamination exceeds the cleanup standards. In areas where deeper interior wetland sediment contamination exceeds the cleanup standards in Section IV.A.3, Institutional Controls shall be required to restrict dredging without adequate precautions (e.g. engineering controls, PPE, monitoring, etc.) to minimize or prevent direct contact with contaminated sediment during dredging activities, including regulatory oversight.

(d) Institutional Controls shall also be required to ensure that any remedial components constructed as part of the selected remedy, such as, but not limited to, monitoring wells throughout the site, covers or caps over contaminated soil areas, or low-head cofferdams, or other structures constructed or equipment in or near the HBHA Pond as part of the remedy are not disturbed or otherwise compromised by any other use or activity. Permanent access to all components of the remedy will also be obtained.

4. Long-term Monitoring

(a) Groundwater monitoring shall be included to ensure that contaminated soils that are left in place do not impact groundwater and do not create unacceptable human health or ecological risks in the future. Groundwater monitoring wells shall be installed to evaluate contaminant trends and human health and ecological risks or hazards. Monitoring scope and frequency could change over time. Monitoring shall also be performed to evaluate the performance of the selected remedy.

(b) Long-term inspections (e.g. walkovers, video/ photographs, checklists, etc.) and monitoring (e.g. frequency, entity(ies) responsible for monitoring, etc.) shall be required to ensure that Institutional Controls remain effective and are being enforced.

(c) Long-term monitoring of groundwater, surface water, sediments and biota is necessary to evaluate the performance of the remedy and re-colonization of biota in the dredged area (excluding sediments that accumulate in, and are periodically dredged from, the northern portion of the HBHA Pond (i.e. sediment retention area which includes the primary and secondary treatment cells)), as well as the effectiveness of any revegetation, wetland restoration, or wetland replication area. Any post remedy monitoring for the presence of benthic organisms in the HBHA Pond will consider natural, non-site related factors (e.g., naturally occurring anoxia in deep portions of the water body) that could inhibit the benthic community.

(d) Long-term monitoring of the northern portion of the HBHA Pond (i.e. sediment retention area which includes the primary and secondary treatment cells) shall be necessary to evaluate its sequestering/ treatment effectiveness and performance, as well as the chemocline (continued stratification of contaminated water based on higher density water with higher salt content). Monitoring shall include, at a minimum, the installation and monitoring of sampling stations at discrete sample depths

(e.g. sampling intervals 25 cm to 50 cm apart) in the northern portion of the HBHA Pond for contaminants of concern, specific conductance, dissolved oxygen, ferrous iron (filtered), total iron (unfiltered), and other appropriate water quality parameters, as well as monitoring at the outlets of the primary and secondary treatment cells. The monitoring shall also include sediment accumulation monitoring within the northern portion of the HBHA Pond.

(e) It shall also be necessary to monitor the performance of the selected remedy and contaminant trends and migration patterns at Industri-plex OU-2 and downstream along the Aberjona River and Mystic Lakes. At a minimum, surface water monitoring at the HBHA Pond and monitoring along the series of surface water monitoring stations at Industri-plex OU-2, and downstream along the Aberjona River and Mystic Lakes is required (similar to Remedial Investigation surface water monitoring locations as generally depicted in Figure E-1 of the ROD and this SOW). The monitoring shall also include a component of periodic sediment monitoring within Industri-plex OU-2 boundaries (e.g. wetlands near West Hide Pile, HBHA, Wells G&H Wetlands, Cranberry Bog Conservation Area) and Upper Mystic Lakes including the upper and lower forebays. This monitoring shall also include groundwater monitoring so that the fate and transportation trends of the groundwater plumes (as well as the surface water monitoring) and performance of the selected remedy can be adequately monitored.

5. Wetlands Mitigation and Restoration

For each wetland or aquatic habitat impacted by the remedy, design submittals shall include mitigation and restoration plans, mitigation and restoration monitoring plans, and performance standards in conformance with the ROD, and all ARARS including, but not limited to, the Massachusetts Wetland Protection Act (e.g. 310 CMR 10.55 (4)(b)), Federal Statement of Procedures on Floodplain Management and Wetlands Protection (including Executive Order on Floodplain Management and Executive Order on Protection of Wetlands), and Clean Water Act (including, but not limited to Federal regulations for compliance with Section 404 of the Clean Water Act, US Army Corps of Engineers Regulatory Guidance Letter dated August 3, 2006).

V. REMEDIAL DESIGN

The Settling Defendants shall develop a final Remedial Design for the remedy described in the ROD and this SOW that meets the Performance Standards specified in Section IV

of this SOW. Section V.A. describes the Settling Defendants' responsibilities for selecting a contractor and developing and implementing a surface water monitoring plan. Section V.B. describes the Settling Defendants' responsibilities for submitting deliverables during the Remedial Design. Section V.C. describes the Settling Defendants' responsibilities for conducting Remedial Design Project Meetings.

The Settling Defendants shall sequence the implementation of final Remedy Design and Remedial Action from upstream to downstream locations, so that contamination does not migrate from unremediated upstream areas and potentially impact downstream components of the remedy, unless otherwise approved by EPA. Sequencing may not apply to (i) the implementation of In-Situ Enhanced Bioremediation at the West Hide Pile; and (ii) groundwater, surface water and sediment investigations at/near the West Hide Pile, East Hide Pile, and adjacent wetlands investigations, to further evaluate the hide piles' potential impacts on human health and the environment (exceeding the cleanup standards established for this remedy). Consistent with this sequencing, no construction work shall occur in the Wells G&H Wetlands and Cranberry Bog Conservation Area until construction is substantially complete in upstream areas (e.g. HBHA Pond component of the remedy).

A. Initial Remedial Steps

The Initial Remedial Steps Phase shall consist of contractor selection, and surface water monitoring plan implementation.

The Settling Defendants shall submit to EPA and MassDEP a Remedial Design Initial Remedial Steps schedule for the required deliverables (electronic and hard copies) as stated herein for each of the Initial Remedial Design activities.

1. All work performed by the Settling Defendants pursuant to the Consent Decree shall be carried out under the oversight of a qualified Supervising Contractor and/or Project Coordinator, the selection of which shall be subject to disapproval by EPA. Within thirty (30) days after receipt of notice of the lodging of the Consent Decree, the Respondents shall notify EPA and MassDEP in writing of the name, title, and qualifications of the Supervising Contractor and the Project Coordinator they propose to use in carrying out all work required under the Consent Decree. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Settling Defendants propose to change a Supervising Contractor and/or Project Coordinator, Settling Defendants shall give such notice to EPA and MassDEP, and must obtain an authorization to proceed from EPA before the new Supervising Contractor and/or Project Coordinator performs, directs, or supervises any Work under this Consent

Decree.

2. All Remedial Design Work performed by the Settling Defendants pursuant to the Consent Decree shall be carried out under the direction and supervision of a qualified Remedial Design Contractor, the selection of which shall be subject to disapproval by EPA. Within thirty (30) days after receipt of notice of the lodging of the Consent Decree, the Settling Defendants shall notify EPA and MassDEP in writing of the name, title, and qualifications of the Remedial Design Contractor they propose to use in carrying out all Remedial Design Work required under the Consent Decree. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Settling Defendants propose to change the Remedial Design Contractor, Settling Defendants shall give such notice to EPA and MassDEP, and must obtain an authorization to proceed from EPA before the new Remedial Design Contractor performs, directs, or supervises any Work under this Consent Decree.

3. Within 30 days after approval of the Remedial Design Contractor, the Settling Defendants shall submit a Surface Water Monitoring Plan to EPA and MassDEP for EPA's review and approval or modification, after reasonable opportunity for review and comment by MassDEP. The Surface Water Monitoring Plan shall consist of monthly baseflow surface water sampling and quarterly storm flow sampling, and include a proposed schedule for all deliverables (Initial Remedial Steps schedule). The location and frequency of sampling shall be consistent with the monitoring conducted during the Remedial Investigation. The Surface Water Monitoring Plan shall include all monitoring and analyses necessary to satisfy the surface water monitoring outlined in the ROD and shall be generally consistent with the monitoring conducted during the RI/FS. It shall continue until the implementation of the Operation and Maintenance Plan, which shall include Long-Term Environmental Monitoring (much of the surface water monitoring will continue under Operation and Maintenance). The data shall be utilized to monitor surface water trends and demonstrate compliance during implementation of the remedy.

4. A Project Operations Plan (POP) shall be prepared in support of all fieldwork to be conducted according to the Surface Water Monitoring Plan. The Settling Defendants shall prepare the POP in accordance with Attachment A, which shall include, but not be limited to, the following:

    (a) a Site Management Plan (SMP);

    (b) a Sampling and Analysis Plan (SAP) which includes:

        (i) a Quality Assurance Project Plan (QAPP);

        (ii) a Field Sampling Plan (FSP);

        (iii) a site-specific Health and Safety Plan (HSP);

        (iv) a detailed description of how field data will be interpreted and presented in subsequent monthly baseflow and quarterly storm flow reports; and

        (vi) a maintenance program which shall contain provisions for inspection, continued maintenance, and repair of the surface water monitoring equipment and stations.

5. Upon receiving EPA's approval or modification of the Surface Water Monitoring Plan, the Settling Defendants shall implement the Surface Water Monitoring Plan, and within sixty (60) days of receiving EPA's approval or modification of the Surface Water Monitoring Plan, the Settling Defendants shall submit to EPA and the MassDEP the first monthly baseflow Surface Water Monitoring Report. The Settling Defendants shall also submit storm flow Surface Water Monitoring Reports to EPA and MassDEP on quarterly basis. The Settling Defendants shall continue to implement the Surface Water Monitoring Plan and submit these monthly and quarterly reports until EPA approves and the Settling Defendants initiate the Environmental Monitoring Plan under Section VI.H. of this SOW (Initiation of Final Environmental Monitoring Plan and Revised POP).

B. Deliverables

The Settling Defendants shall submit to EPA and MassDEP the required deliverables (electronic and hard copies) as stated herein for each of the Remedial Design activities. Except where expressly stated otherwise in this SOW, each

deliverable shall be subject to review and approval or modification or disapproval by EPA, after a reasonable opportunity for review and comment by MassDEP, in accordance with Section XI of the Consent Decree, EPA Approval of Plans and Other Submissions. EPA will consider requests from the Settling Defendants to combine two or more of the deliverables described below into one or more deliverable.

The Settling Defendants shall submit to EPA and MassDEP a Remedial Design Deliverables schedule for the required deliverables (electronic and hard copies) as stated herein for each of the Remedial Design activities.

1. Design Progress Reports

On the 10th working day of every month beginning in the month EPA approves the Supervising Contractor and until EPA approval of the 100% Design, the Settling Defendants shall submit Design Progress Reports to the EPA and MassDEP in accordance with Section X of the Consent Decree, Reporting Requirements. The reports shall summarize all activities that have been conducted in the two months preceding the Design Progress Report and those activities planned for the next two months. The Design Progress Reports shall also identify the current percent design complete, any problems encountered and/or changes to the schedule, and shall summarize all the results of sampling and tests and all other data received by the Settling Defendants.

2. Remedial Design Work Plan

(a) Within sixty (60) days after EPA approval of the Remedial Design Contractor, the Settling Defendants shall submit a Remedial Design Work Plan with Settling Defendants' certification. The Remedial Design Workplan shall include a Remedial Design POP for any fieldwork to support investigations to take place during Remedial Design and prior to Remedial Action.

(b) The Remedial Design POP shall be prepared in accordance with Attachment A of this SOW, and shall include, at a minimum:

(i) Site Management Plan (SMP);

(ii) Sampling and Analysis Plan (SAP) which includes:

(1) Quality Assurance Project Plan (QAPP);

(2) Field Sampling Plan (FSP);

(3) Site-specific Health and Safety Plan (HSP); and

(4) Community Relations Support Plan (which includes Surface Water Monitoring Plan) (CRSP).

(c) The Remedial Design Workplan and POP shall summarize all activities to be undertaken in connection with the Remedial Design phase. The Remedial Design Workplan and POP shall include, at a minimum, detailed descriptions of all activities to be undertaken in connection with the Remedial Design, identification of the specific activities necessary to complete the Remedial Design, and a proposed schedule for completion of Remedial Design and all deliverables (Remedial Design Deliverables schedule); and detail the proposed scope and schedule for all deliverables for the Remedial Design.

(d) Within 30 days after the Settling Defendants receive EPA approval or modification, after reasonable opportunity for review and comment by MassDEP, of the Remedial Design Workplan and POP, the Settling Defendants shall initiate the design activities in accordance with the Remedial Design Workplan and the schedules set forth therein.

(e) The Remedial Design Workplan and POP shall be consistent with Section VI of the Consent Decree (Performance of Work by the Performing Settling Defendants), and Section L of the ROD, this SOW, and EPA's RD/RA guidance, then in effect.

(f) The Remedial Design Workplan and POP shall describe in detail, at a minimum, the activities to be undertaken during the Remedial Design Phase per Section L of the Record of Decision, as well as any other investigations proposed by EPA or proposed by the Settling Defendants and approved by EPA. Some of these investigations include:

(i) investigations to delineate the limits of contamination requiring remediation in areas of accessible sediments;

(ii) investigations to further delineate the limits of contamination requiring Institutional Controls (including areas requiring caps) and evaluate background groundwater conditions for ammonia;

(iii) studies to evaluate the most appropriate form(s) of Institutional Controls for the various components of the remedy, taking into account the various exposure pathways, and support the design and implementation of Institutional Controls. The studies shall evaluate the estimated duration, long-term effectiveness and enforceability of various forms of Institutional Controls, including but not limited to deed restrictions, easements, regulatory action, zoning ordinances, and/or other legal and/or administrative measures, either individually or in combination. The evaluation shall take into consideration all EPA and MassDEP guidance documents and regulatory requirements, including any available model forms/ documents applicable to Institutional Controls (e.g. Grant of Environmental Restriction and Easement). The studies shall also include examination of property title and related title work, and shall consider the practicality of establishing various forms of Institutional Controls taking into consideration the nature and scope of existing encumbrances on the subject property and the ease or difficulty of obtaining subordination agreements relative to such encumbrances;

(iv) topographical or otherwise appropriate surveys to delineate property boundaries, boundaries of each individual area requiring Institutional Controls within each property, utilities, rights-of-way, and easements in

order to establish the necessary Institutional Controls;

(v) studies to locate property suitable for the construction of compensatory wetlands to mitigate wetland and water function and value losses associated with the remedy;

(vi) investigation of the contaminated groundwater plumes and where they discharge into the HBHA Pond so that size and location of the primary treatment cell can be appropriately located and capture the groundwater plumes (e.g. arsenic, benzene, ammonia);

(vii) investigations regarding the design and construction of the primary and/ or secondary treatment cells in the HBHA Pond, including various vertical (e.g. secondary treatment cell) and shallow horizontal (e.g. primary treatment cell) aeration studies to enhance treatment of contaminants of concern (including methods for increasing oxygen levels in surface water), flood storage and mitigation, and additional site-specific studies to enhance performance and surface water compliance;

(viii) additional site-specific, EPA-approved studies/tests may be conducted to determine the relative bioavailability of arsenic from surface soils, or from subsurface soils, if such an approach is deemed beneficial in limiting the extent of Institutional Controls that may be necessary for individual properties;

(ix) pre-design investigations of groundwater, surface water and sediments to further evaluate the West Hide Pile (WHP) area (including the East Hide Pile (EHP)) contaminated groundwater plumes potential impact on the nearby wetlands (surface

water and sediments) and downgradient groundwater plumes. The investigations shall produce sufficient data for EPA to further assess potential unacceptable human health and ecological risks near the WHP area and nearby wetlands;

(x) any other investigation required by EPA, or proposed by the Settling Defendants and approved by EPA.

3. 30% Design Submission

Unless EPA extends this deadline, within 360 days of receiving EPA's approval or modification of the Remedial Design Work Plan and POP, the Settling Defendants shall submit to EPA and MassDEP the 30% Remedial Design for review and approval or modification by EPA, after reasonable opportunity for review and comment by the MassDEP. The 30% submission shall include, at a minimum, the results of all field investigations and pre-design studies, a discussion of how ARARs are being met by the design, the design criteria, the project delivery strategy, preliminary plans, drawings, sketches, and calculations, an outline of the required technical specifications, and a preliminary construction schedule and costs. The 30% design submission shall also include recommendation(s) for the most appropriate form(s) of Institutional Controls for the various components of the remedy to protect human health from potential exposures to contaminated soils, sediments, and groundwater, protect the remedy, and achieve the Performance Standards. The recommendations shall also describe how the performance standards, monitoring and enforcement of the Institutional Controls for components of the remedy will be met, include plan(s) showing proposed areas requiring Institutional Controls (locations and extent) for each component of the remedy within each property and/or areas within the property, and take into consideration: 1) all EPA and MassDEP guidance documents and regulatory requirements, including any model forms/ documents applicable to Institutional Controls (e.g. Grant of Environmental Restriction and Easement), 2) implementation of the Institutional Controls, and 3) enforcement of the Institutional Controls.

4. 95% Design Submission

Within 90 days of receiving EPA's approval or modification of the 30% Remedial Design from EPA, the Settling Defendants shall submit the 95% Remedial Design for review and approval. This design submittal shall

address 95% of the total Remedial Design for each component of the Remedial Action including, but not limited to:

(a) 95% design construction drawings, plans and specifications (general specifications, drawings, and schematics), consistent with the technical requirements of all ARARs. This submittal shall include general correlation between working construction plans/drawings and technical specifications in reproducible format. For each wetland or aquatic habitat impacted by the remedy, this submittal shall also include mitigation and restoration plans, mitigation and restoration monitoring plans, and performance standards in conformance with the ROD, and all ARARS including, but not limited to, the Massachusetts Wetland Protection Act (e.g. 310 CMR 10.55 (4)(b)), Federal Statement of Procedures on Floodplain Management and Wetlands Protection (including Executive Order on Floodplain Management and Executive Order on Protection of Wetlands), and Clean Water Act (including, but not limited to Federal regulations for compliance with Section 404 of the Clean Water Act, US Army Corps of Engineers Regulatory Guidance Letter dated August 3, 2006).

(b) Basis of design/assumptions, noting any changes from the approved 30% Design.

(c) All revisions required by EPA based upon EPA and MassDEP comments on the 30% Design.

(d) Draft Contingency Plan which shall address the on-site construction workers and the local affected population in the event of an accident or emergency.

(e) Draft Constructability Review report which evaluates the suitability of the project and its components in relation to the Site.

(f) Draft detailed statement of how Performance Standards, including but not limited to all ARARs listed in the ROD, will be achieved and maintained, and a statement of all assumptions and all drawings and specifications necessary to support the analysis of compliance with all Performance Standards and ARARS. This statement shall identify each ARAR, specify the statute and citation of the ARAR,

summarize the requirements of the ARAR, specify in detail all activities that will be conducted to comply with the ARAR, and specify in detail all activities that will be conducted to demonstrate compliance with the ARAR.

(g) A Draft Remedial Action (RA) Workplan. This workplan shall include, at a minimum, discussion of project construction and delivery strategy, schedule for work, change order procedures, lines of and frequency of communications during RA, subcontractor submittal/approval process, and cost estimates (to be kept confidential by EPA). It shall also include a description of all activities necessary to implement all components of the RA, in accordance with this SOW, the Consent Decree and the ROD.

(h) A Draft Revised POP for use during Remedial Action, prepared in accordance with Attachment A of this SOW, to include and address similar components as the Remedial Design POP and other issues as necessary. In addition, the Draft Revised POP for use during Remedial Action shall address construction quality assurance components, including, at a minimum, the following elements:

(i) Responsibility and authority of all organization and key personnel involved in the remediation action construction.

(ii) Construction Quality Assurance (CQA) Personnel Qualifications and the minimum qualifications of the CQA Officer and supporting inspection personnel.

(iii) Inspection Activities including the observations and tests that will be required to monitor the construction and/or installation of the components of the Remedial Action(s), and verify compliance with health and safety procedures and environmental requirements (e.g., air quality and emissions monitoring records, waste disposal transportation manifests).

(iv) Checklists for the required tests and inspections.

(v) Sampling requirements and activities including standard operating procedures for sampling and testing, sample size, sample locations, frequency of testing, criteria for acceptance and rejection (i.e., quality assurance and quality control procedures), and plans for correcting problems as addressed in the project specifications.

(vi) Documentation and requirements for CQA activities. This shall include such items as daily summary reports and inspection data sheets.

(vii) A process for notifying EPA and MassDEP and seeking approval for changes to the design.

(viii) A process for responding to significant weather events during construction.

(i) A Draft Institutional Controls Plan(s). The Plan(s) shall consider the results of any Institutional Controls studies performed under the Remedial Design Work Plans (e.g. V.B.2.f (iii)) and any recommendation of Institutional Controls form(s) included within the 30% Design Submission. The Plan(s) shall also include design(s) for Institutional Controls for the various components of the remedy to protect human health from potential exposures to contaminated soils, sediments, and groundwater, protect the remedy, and achieve the Performance Standards. Where Institutional Controls design(s) include Grant of Environmental Restriction and Easement, the Grant shall be designed to satisfy all EPA and MassDEP guidance documents and regulatory requirements, including any model forms/ documents applicable to Institutional Controls (e.g. Grant of Environmental Restriction and Easement). The Plan(s) shall also include the following:

(i) all plans/drawings illustrating restricted areas, including surveyed plans meeting all applicable recording requirements;

(ii) all plans and schedule for compliance monitoring of Institutional Controls including, but not limited to, schedule and frequency of inspections, protocol for required document review prior to performing each inspection (e.g., detailed list of documents to be reviewed), protocol for interviews to be performed as part of the inspections (e.g., types of information to be discussed during interview); inspection checklist; list of evidence to be gathered during inspections (including videos/ photographs), and method of gathering and preserving such evidence; inspection reporting, and actions taken to ensure compliance with Institutional Controls. The plan shall regularly gather information that will be useful for evaluating the effectiveness of Institutional Controls. This information and information gathered under the O&M Plan, as well as any other relevant information, shall also be applicable to Five Year Reviews;

(iii) Grant of Environmental Restriction and Easement, where appropriate, specific to the appropriate property and ownership;

(iv) title certification, where appropriate, specific to the appropriate property and ownership;

(v) identification of party(ies) performing compliance monitoring and reporting; and

(vi) financial assurance plan(s) for long-term compliance monitoring and reporting.

(j) A Draft Operation and Maintenance Plan. This plan shall include, at a minimum, the following:

(i) Description of normal operations and maintenance.

(ii) Description of potential operational problems.

(iii) Description of routine process monitoring and analysis.

(iv) Description of contingency operation and monitoring.

(v) Operational safety plan.

(vi) Description of equipment.

(vii) Annual operation and maintenance budget.

(viii) Recordkeeping and reporting requirements.

(ix) Well maintenance program including, at a minimum, a provision for inspection, continued maintenance and repair, if necessary, of all existing wells, and a provision for prompt and proper well abandonment, as appropriate.

(x) Establishment of financial assurance mechanisms for post-closure care consistent with the Consent Decree.

(xi) Post-closure care inspection schedules and provisions for implementing such activities consistent with 40 CFR Part 264; and

(xii) Detailed discussions describing the procedures that the Settling Defendants shall use to fulfill the five-year review requirements of CERCLA after initiation of the Remedial Action.

(xiii) Access plan that describes how access to all components of the remedy will be obtained for the entire period the component is required for the remedy.

(k) A Draft Environmental Monitoring Plan. The environmental monitoring plan shall identify the long-term groundwater, surface water and sediment monitoring to evaluate contamination status and migration, demonstrate conformance and compliance, and support Five-Year

Reviews. This plan shall be developed in accordance with 40 C.F.R. 264.97 and shall include at a minimum, the following:

(i) sampling locations;

(ii) sampling frequency;

(iii) appropriate statistical modeling or other data interpretation techniques.

(l) A Draft Revised POP. A Draft Revised POP to be prepared in support of all fieldwork to be conducted according to the Environmental Monitoring Plan. This Revised POP shall be prepared in accordance with Attachment A of this SOW.

5. 100% Design Submission

Within 90 days of receiving EPA's approval or modification of the 95% Remedial Design from EPA, the Settling Defendants shall submit the 100% Remedial Design for review and approval. This design submittal shall address 100% of the total Remedial Design for each component of the Remedial Action including, but not limited to:

(a) Complete set of final construction drawings, plans and specifications (general specifications, drawings, and schematics), consistent with the technical requirements of all ARARs and in reproducible format. This submittal shall include general correlation between working constructions plans/drawings and technical specifications.

(b) Final bid documents including final drawings and technical specifications, complete cost proposal, and the required schedule.

(c) All revisions required by EPA based upon EPA and MassDEP comments on the 95% Design.

(d) Final Contingency Plan which shall address the on-site construction workers and the local affected population in the event of an accident or emergency.

(e) Final Constructability Review report which evaluates the suitability of the project and its components in relation to the Site.

(f) Final detailed statement of how Performance Standards, including but not limited to all ARARs listed in the ROD, are achieved and shall be maintained, and a statement of all assumptions and all drawings and specifications necessary to support the analysis of compliance with all Performance Standards and ARARS.

(g) Draft Final RA Workplan.

(h) Draft Final Revised POP.

(i) Draft Final Institutional Controls Plan(s).

(j) Draft Final O&M Plan.

(k) Draft Final Environmental Monitoring Plan.

(l) Draft Final Revised POP.

C. Design Progress Meetings

The Settling Defendants and their Supervising Contractor shall meet with EPA and MassDEP during the design phase to discuss the status of the design, present the results of any investigations, and to discuss any issues associated with the development of design. These meetings shall occur on a monthly basis, or on a schedule approved by EPA. In addition, EPA may schedule meetings to discuss any interim design plans or any issues that arise during design.

VI. REMEDIAL ACTION

The Settling Defendants shall implement the final design for the remedy, as described in the Record of Decision and this SOW that meets the applicable Performance Standards specified in Section IV of this SOW.

The Settling Defendants shall submit to EPA and MassDEP the required deliverables as stated herein for each of these Remedial Action activities. Except where expressly stated otherwise in this SOW, each deliverable shall be subject to review and approval or modification or disapproval by EPA, after a reasonable opportunity for review and comment by MassDEP, in accordance with Section XI of the Consent Decree, (EPA Approval of Plans and Other Submissions). EPA will consider requests from the Settling Defendants to combine two or more of the deliverables described below into one or more deliverable.

A. Final Remedial Action Work Plan

Within 30 days after EPA approval of the 100% Design Submission, the Settling Defendants shall submit a Final Remedial Action Work Plan for EPA review and approval or modification or disapproval, after a reasonable opportunity for review and comment by MassDEP. The Remedial Action Work Plan for implementing the Remedial Action and associated activities shall include a Final Revised POP and be consistent with the approved 100% Remedial Design. Upon EPA approval of the Final Remedial Action Work Plan, Settling Defendants shall implement the work plan.

The Final Remedial Action Work Plan shall provide a detailed description of all construction activities, operations and maintenance, performance monitoring, and an overall management strategy necessary to implement and complete the Remedial Action. The Final Remedial Action Work Plan shall contain, at a minimum:

1. A description of all activities necessary to implement the Remedial Action, in accordance with the approved Remedial Design, this SOW, the Consent Decree and the ROD, including but not limited to the following:

   (a) award of project contracts, including all agreements with off-Site treatment and/or disposal facilities; and

   (b) contractor mobilization/Site preparation, including construction of necessary utility hookups.

2. A Final Revised POP which shall be prepared in support of all fieldwork to be conducted according to the approved Remedial Action Work Plans. The Final Revised POP shall be consistent with Attachment A of this Statement of Work.

3. An Implementation Schedule which shall identify all major milestones for completion of the Remedial Action including the commencement and completion of construction. The Implementation Schedule shall also identify the key construction dates including the initiation and completion date of the remedy. The Implementation Schedule shall also identify the projected dates of the Progress Meetings conducted during the implementation, including those required pursuant to Section VI.B of this SOW.

4. A detailed statement of how all other Performance Standards, including but not limited to all ARARs listed in the ROD, will be achieved and maintained, and a statement of all assumptions and all drawings and specifications necessary to support the analysis of compliance with all Performance Standards and ARARs. This statement shall identify each ARAR, specify the statute and citation of the ARAR, summarize the requirements of the ARAR, specify in detail all activities that will be conducted to comply with the ARAR, and specify in detail all activities that will be conducted to demonstrate compliance with the ARAR.

B. Remedial Action Progress Reports

On the 10th working day of each month during construction and every other month at other times, beginning with the submission of the Final Remedial Action Work Plan and until EPA approval of the Construction Completion Report, the Settling Defendants shall submit to EPA and MassDEP Remedial Action Progress Reports with Settling Defendants' Certification. The Remedial Action Progress Reports shall summarize all activities that have been conducted during each period and those planned for the next period. The Progress Reports shall also:

1. identify the percent of construction completed;

2. identify any problems encountered and/or changes to the schedule;

3. summarize the results of all sampling and tests, including long-term groundwater monitoring, and all other data received by the Settling Defendants (results of sampling and tests may be submitted under separate cover within 30 days of the receipt of data and test results by the Settling Defendants);

4. identify the status of each component of remedy. If a component of the remedy has been completed since the last Progress Report, the Progress Report shall provide a description and chronology of the activities completed, as-built drawings signed and stamped by a professional engineer, sufficient documentation that the remedy component meets the applicable Performance Standards, including sampling results and QA/QC documentation of these results, and certification that the work was performed consistent with the ROD, the Consent Decree, this SOW, the Remedial Design plans and specifications, and the Remedial Action Work Plan and POP. The summary of each completed component of the remedy may be submitted as a report under separate cover by the Settling Defendants.

5. if appropriate, photographs of the Site activities. Photographs shall be labeled with the date, brief description of the activity, weather conditions and direction/orientation of the photograph.

C. Pre-construction Conference

Within 10 days of receiving EPA's approval or modification of the Final Remedial Action Workplan, the Settling Defendants shall hold a Pre-construction Conference. The participants shall include all parties involved in the Remedial Action, including but not limited to the Settling Defendants and their representatives, EPA, and MassDEP.

D. Initiation of Construction

Within thirty (30) days of receiving EPA's approval or modification of the Final Remedial Action Workplan and Final Revised POP, the Settling Defendants shall initiate all the Remedial Action activities specified in the schedule contained therein.

E. Meetings During Construction

During the construction period, the Settling Defendants and their construction contractor(s) shall meet monthly, or more frequently as needed, with EPA and MassDEP regarding the progress and details of construction. Conference calls may be substituted for meetings upon approval of EPA.

F. Final Environmental Monitoring Plan and Revised POP

Within 30 days of the 50% construction complete date, the Settling Defendants shall submit to EPA for review and approval or modification, after reasonable opportunity for review and comment by MassDEP, a Final Environmental Monitoring Plan, and Revised POP. The Final Environmental Monitoring Plan and Revised POP shall be based on the Draft Final Environmental Monitoring Plan and Revised POP submitted as part of the 100% Remedial Design, and include all aforementioned relevant requirements.

G. Final Operation and Maintenance Plan

Within 30 days of the 75% construction complete date, the Settling Defendants shall submit to EPA for review and approval or modification, after reasonable opportunity for review and comment by MassDEP, a Final Operation and Maintenance Plan. The Final Operation and Maintenance Plan shall be based on

the Draft Final Operation and Maintenance Plan submitted as part of the 100% Remedial Design, and include all aforementioned relevant requirements.

H. Initiation of Final Environmental Monitoring Plan and Revised POP

Within 10 days of receiving EPA's approval or modification of the Final Environmental Monitoring Plan and Revised POP, the Settling Defendants shall implement the Final Environmental Monitoring Plan and Revised POP.

I. Final Construction Inspection

Within 30 days after Settling Defendants conclude that the construction has been fully (100% complete) performed, the Settling Defendants shall schedule and conduct a Final Construction Inspection. This inspection shall include participants from all parties involved in the Remedial Action, including but not limited to the Settling Defendants and their contractors, EPA and MassDEP.

J. Construction Completion Report

Upon completion of construction of the Remedial Action, the Settling Defendants shall submit a Construction Completion Report (entitled "Close-Out Report") to EPA for approval or modification, after reasonable opportunity for review and comment by MassDEP. The report shall be submitted within 45 days of the Final Construction Inspection. The report shall be consistent with then current EPA Superfund construction completion guidance and shall include, at a minimum, the following documentation:

1. A summary of all procedures actually used (in chronological order) during construction.

2. Tabulation of all analytical data and field notes prepared during the course of the Remedial Design and Remedial Action to document that materials used were as specified in the approved 100% Remedial Design. Full copies of all results and notes shall be available and produced for EPA and MassDEP upon request.

3. QA/QC documentation of these results.

4. Presentation of these results in appropriate figures.

5. “As-built” drawings, signed and stamped by a professional engineer.

6. Documentation of the Final Construction Inspection, including

description of the deficient construction items, if any, identified during the inspection and documentation of the final resolution of all deficient items.

7. Certification that the work was performed consistent with the ROD, the Consent Decree, this SOW, the design plans and specifications, and the Remedial Action POP.

8. A description, with appropriate photographs, maps and tables of the disposition of the Site (including areas and volumes of soil/sediment placement and disturbance).

9. Final, detailed cost breakdowns for each of the remedy components.

10. Conclusions regarding conformance of construction activities with the Performance Standards.

11. Schedule for remaining maintenance activities, and compliance monitoring including summary of the Operation and Maintenance Plan and Compliance Monitoring Plans, and discussion of any problems/concerns.

K. Initiation of Final Operation and Maintenance Plan

Within 30 days of receiving EPA's approval or modification of the Settling Defendants' Final Construction Completion Report for the Remedial Action, the Settling Defendants shall implement all operation and maintenance activities in accordance with the terms and schedules set forth in the Final Operation and Maintenance Plan approved by EPA.

L. Demonstration of Compliance Report

At the completion of the period necessary to demonstrate compliance with the Performance Standards and objectives of the ROD, the Settling Defendants shall submit to EPA for review and approval a Demonstration of Compliance Report. This report shall contain all information necessary to demonstrate compliance with Performance Standards. If EPA, after reasonable opportunity for review and comment by the MassDEP, determines that the Performance Standards have not been achieved, EPA will notify the Settling Defendants of its disapproval of the Demonstration of Compliance Report and the activities that must be undertaken by the Settling Defendants.

If EPA concludes, based on the initial or any subsequent Demonstration of Compliance Report, and after reasonable opportunity for review and comment by the MassDEP, that all Performance Standards have been achieved, EPA will issue its approval of such report.

M. Institutional Controls

Within sixty (60) days of receipt of EPA approval or modification of the Draft Final Institutional Control Plan (V.B.5.i), after reasonable opportunity for review and comment by MassDEP, and consistent with Section IX ("Access and Institutional Controls") of the Consent Decree, the Settling Defendants shall use best efforts (as such term is used and defined in the Consent Decree) to implement the Institutional Control Plan. In the event that a request to MassDEP to serve as grantee of any grant of environmental restriction and easement is anticipated, Settling Defendants shall comply with MassDEP guidance documents and regulatory requirements, including any model forms/ documents applicable to Institutional Controls (e.g. Grant of Environmental Restriction and Easement).

VII. SUBMISSIONS REQUIRING AGENCY APPROVAL

A. All plans, deliverables and reports identified in the SOW for submittal to EPA and the MassDEP shall be delivered (electronically and hard copies) to EPA and MassDEP in accordance with the Consent Decree and this SOW.

B. Any plan, deliverable, or report submitted to EPA, in consultation with MassDEP, for approval shall be printed using two-sided printing and marked "Draft" on each page and shall include, in a prominent location in the document, the following disclaimer: "Disclaimer: This document is a DRAFT document prepared by the Settling Defendants under a government Consent Decree. This document has not undergone formal review by the EPA and MassDEP. The opinions, findings, and conclusions, expressed are those of the author and not those of the U.S. Environmental Protection Agency or the Massachusetts Department of Environmental Protection."

C. Approval of a plan, deliverable or report does not constitute approval of any model or assumption used by the Settling Defendants in such plan, deliverable or report.